

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): Method for producing a workpiece, ~~and, for example, a plate,~~  
of steel which is resistant to abrasion and whose chemical composition comprises, by weight:

$$0.35\% \leq C \leq 0.8\%$$

$$0\% \leq Si \leq 2\%$$

$$0\% \leq Al \leq 2\%$$

$$0.35\% \leq Si + Al \leq 2\%$$

$$0\% \leq Mn \leq 2.5\%$$

$$0\% \leq Ni \leq 5\%$$

$$0\% \leq Cr \leq 5\%$$

$$0\% \leq Mo \leq 0.50\%$$

$$0\% \leq W \leq 1.00\%$$

$$0.1\% \leq Mo + W/2 \leq 0.50\%$$

$$0\% \leq B \leq 0.02\%$$

$$0\% \leq Ti \leq 2\%$$

$$0\% \leq Zr \leq 4\%$$

$$0.05\% \leq Ti + Zr/2 \leq 2\%$$

$$0\% \leq S \leq 0.15\%$$

$$N < 0.03\%$$

- optionally from 0% to 1.5% of copper,
- optionally at least one element selected from Nb, Ta and V at contents such that

$$\text{Nb}/2 + \text{Ta}/4 + \text{V} \leq 0.5\%,$$

- optionally at least one element selected from Se, Te, Ca, Bi, Pb at contents which are less than or equal to 0.1%,

the balance being iron and impurities resulting from the production operation, the chemical composition further complying with the following relationships:

$$0.1\% \leq \text{C} - \text{Ti}/4 - \text{Zr}/8 + 7\text{xN}/8 \leq 0.55\%$$

and:

$$\text{Ti} + \text{Zr}/2 - 7\text{xN}/2 \geq 0.05\%$$

and:

$$1.05\text{xMn} + 0.54\text{xNi} + 0.50\text{xCr} + 0.3\text{x}(\text{Mo} + \text{W}/2)^{1/2} + \text{K} > 1.8$$

with  $\text{K} = 0.5$  if  $\text{B} \geq 0.0005\%$  and  $\text{K} = 0$  if  $\text{B} < 0.0005\%$ ,

according to which the plate-workpiece is subjected to a thermal quenching processing operation which is carried out in the heat for forming in the hot state ~~and, for example, rolling heat~~, or after austenitization by reheating in a furnace in order to carry out the quenching, the process comprising:

- cooling the workpiece ~~or the plate is cooled~~ at a mean cooling rate greater than  $0.5^\circ\text{C/s}$  between a temperature greater than  $\text{AC}_3$  and a temperature of from  $\text{T} = 800 - 270\text{x}\text{C}^*$  -  $90\text{xMn} - 37\text{xNi} - 70\text{xCr} - 83\text{x}(\text{Mo} + \text{W}/2)$ , with  $\text{C}^* = \text{C} - \text{Ti}/4 - \text{Zr}/8 + 7\text{xN}/8$ , to  $\text{T} - 50^\circ\text{C}$ ,

- then cooling the workpiece ~~or the plate is then cooled~~ at a core cooling rate  $\text{Vr} < 1150\text{xep}^{-1.7}$  and greater than  $0.1^\circ\text{C/s}$  between the temperature  $\text{T}$  and  $100^\circ\text{C}$ ,  $\text{ep}$  being the thickness of the plate expressed in mm,

- cooling the workpiece ~~or the plate is cooled~~ as far as ambient temperature ~~and optionally planishing is carried out.~~

2. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$1.05 \times \text{Mn} + 0.54 \times \text{Ni} + 0.50 \times \text{Cr} + 0.3 \times (\text{Mo} + \text{W}/2)^{1/2} + \text{K} > 2.$$

3. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$\text{C} > 0.45\%.$$

4. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$\text{Si} + \text{Al} > 0.5\%.$$

5. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$\text{Ti} + \text{Zr}/2 > 0.10\%.$$

6. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$\text{Ti} + \text{Zr}/2 > 0.30\%.$$

7. (currently amended): Method according to claim 1, ~~characterized in that~~wherein:

$$\text{C}^* \geq 0.22\%.$$

8. (currently amended): Method according to claim 1, ~~characterized in that~~wherein

tempering is further carried out at a temperature which is less than or equal to 350°C.

9. (currently amended): Method according to claim 1, ~~characterized in that~~wherein, in

order to add titanium to the steel, the liquid steel is placed in contact with a slag containing titanium and the titanium of the slag is caused to diffuse slowly in the liquid steel.

10-20. (canceled).

21. (new): Method according to claim 1, wherein the workpiece is a plate.

22. (new): Method according to claim 1, wherein the heat for forming in the hot state is a rolling heat.

23. (new): Method according to claim 1, further comprising carrying out planishing.